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Does the Process of Deliberation Change Individuals' Health State Valuations? An Exploratory Study Using the Person Trade-Off Technique

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ABSTRACT

Background: This article explores two gaps in the health state valuation literature: the effect of processes and the stability of health state valuations, and the existence of preexisting valuations. Stability in health state valuations over time depends on whether preferences are considered to be preexisting (axiom of completeness) and therefore can be gathered reliably, or are constructed during consideration and debate. Under the former, changes in revealed preferences are evidence of poor reliability; under the latter, it is a function of the deliberative process. **Methods:** This study explores the effect of deliberation on health state valuations elicited by using the person trade-off technique. Quantitative analysis was used to explore whether respondents changed their responses following deliberation and the impact of change on aggregate health state values. Qualitative methods were used to explore respondents' views on the elicitation process and the impact of deliberation on

their responses. **Results:** Following discussion and deliberation, 74% of the participants changed their person trade-off valuations and this did have an impact on the aggregate valuations. The qualitative analysis lends some support to the construction of preference assumption. **Conclusions:** The results from this exploratory study challenge the notion that individuals have preexisting health state preferences and call for further detailed research in this area. Furthermore, it raises concerns over current practices around preference elicitation exercises, which have tended to be carried out as a solitary exercise without allowing time for respondents to reflect and deliberate on their decisions.

Keywords: decision making, deliberation, preferences, utility.

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Introduction

In health economics, the techniques used in preference elicitation exercises are based on the underlying assumption that individuals are utility maximizers and that their preferences satisfy the axioms of expected utility theory [1], which is a normative theory of decision making that describes how people should behave under uncertainty and not how they do behave. Expected utility theory is an approximation to behavior under uncertainty that assumes that individuals have fully formed, highly articulated preferences that can be applied to any form of decision making. The expected utility theory axiom of completeness of preferences assumes that when presented with information on a commodity (in this case, health states), individuals can state their preferences for that commodity. Thus, under completeness, an individual can always express a preference or indifference when presented with two or more alternatives. There has been much debate around the extent to which people may not have well-articulated values, especially given the complex task of health state valuation [2–5]. Fischhoff [2] suggests that “individuals lack well differentiated values for all but the most familiar of evaluation questions ... in other cases they must derive specific valuations from some basic values through an inferential process.”

Preferences and Deliberation

There is growing concern that instant responses to a survey question do not reflect people's preferences as well as considered, reflective responses and that the sharing of information, experience, and deliberation may be a mechanism that allows respondents to make a more considered decision.

Deliberation refers either to a particular sort of discussion ... one that involves the careful and serious weighing of reasons for and against some proposition ... or to an interior process by which an individual weighs reasons for and against courses of action. [6]

The purpose of the deliberation process in health state valuation exercises is to help individuals make more “informed” and/or considered decisions. Deliberation differs from debate, with the former helping individuals to reflect on their own and others' viewpoints and helping them to gain a greater understanding of the different propositions. In contrast, in a debate, participants keep deeply entrenched in their viewpoints and position [7]. Deliberation is an aid to thought, judgment, and

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better thinking [8] and can occur as an individual or group process. During deliberation, one may take time to think through a course of action or reflect on the different choices at hand. In a group setting, deliberation allows for the discussion of different viewpoints. Brookfield and Preskill [9] suggest that *group deliberation* refers to the “willingness of individuals to discuss issues as fully as possible by offering arguments and counter arguments ... and by holding strongly to their views unless there are strong reasons not to.”

Deliberation can help individuals in the “construction of preferences,” with discussion and deliberation having an effect on the health state valuation process. Evidence suggests that individuals have difficulty in fully analyzing situations that involve economic and probabilistic judgments [10], and the more complex the task the more difficult this becomes for individuals. Therefore, individuals rely on heuristics or cognitive shortcuts, which can be biased; that is, individuals may ignore relevant and often important information when making their choices [11–13]. Allowing respondents time to discuss and deliberate could provide a more considered and valid response, closer to their *true preference* [14]. Fischhoff [2] argues that individuals may “try on” a value to see how it fits, and they then reflect on their answer, before providing a final response. Thus, the process of administration may actually aid the construction of preferences as well as elicit them [2,3,5,15,16], and discrepancies in results may be a function of a deliberative process of reflection rather than measurement error [17].

Outside of the health economics literature, the focus of deliberation has tended to be around deliberation in relation to democratic decision making or as part of other priority-setting exercises, in relation to stakeholder inclusion and around legitimacy in decision making [18–20]. In our study, deliberation was not used to determine a consensus view within a group, but as an element to allow individuals to discuss and reflect (within a group setting) on the choices offered and to come to a more considered individual response. In terms of health economics, there are very few studies that have explored the impact of deliberation on valuations [21,22]. Of the four studies that explored deliberation, two studies found that individuals changed responses following discussion and deliberation, which seems to provide some support for the “construction of preferences” assumption [14,23]. The experimental study undertaken by Cabasés et al. [24] did not show statistically significant differences between individual and group interviews, although the researchers suggested that using group interviews may be a more efficient procedure.

The study undertaken by Stein et al. [5] suggests that deliberative changes had little or no effect on the aggregate utility elicited by using the standard gamble technique. In contrast, Sanderson and Andrews [23] found that discussion did have a significant effect on the elicited person trade-off (PTO) utilities. They suggest that this was due to the complexity of the PTO technique, and validity was increased following discussion and deliberation [23]. Sheill et al. [14] state that the size and selection of their sample make it difficult to draw strong conclusions; however, there is evidence to suggest that the assumption of completeness cannot be taken for granted. Oliver [25] challenges this conclusion, asserting that greater stability of values over time is probably due to a learning effect of the standard gamble technique rather than completeness. The effect of discussion and deliberation on aggregate utility is unclear and important because it could affect the cost-effectiveness result and ultimately the funding decision.

There has been a call for more detailed work around the role of discussion and deliberation in health state valuation, with a particular focus being given to the effects of the elicitation process on both individual and aggregate health state valuations

[5,7,14,18,21,23]. This article makes an empirical contribution to that debate by exploring the effect of deliberation on health state valuations elicited by using the PTO technique. This exploratory study uses quantitative analysis to test whether there was a change in responses, at both the individual and aggregate (group) levels, following discussion and deliberation. It then uses qualitative techniques to explore a number of relevant themes identified from the literature including the following:

- Deliberation gives a more considered response closer to “true” preferences.
- The process of administration can aid the construction of preferences, with the process helping respondents to develop their values and not just express them.
- The impact of the group membership on final responses—with particular focus on the extent to which individuals decide to follow others and imitating group behaviors rather than deciding independently (the *herding effect* [26]).

Methods

Research and Questionnaire Design

The preference elicitation exercise that is reported in this article forms part of the English contribution to the European Disability Weights (EDW) Project [27]. Details of the methods used during the preference elicitation exercise are outlined below, and further details of the EDW project can be found in Essink-Bot et al. [27]. The subsequent qualitative analysis was an additional investigation undertaken by the authors and did not form part of the EDW project.

The valuation work was conducted in six panel sessions that followed a standardized protocol that allowed for a structured group process. Such structured or “analytical deliberation” processes do not exclude open discussion, but strive to make discussions more effective by imposing a framework to guide them, allowing individuals to engage more fully in deliberations [28]. All sessions were guided by a trained facilitator whose role was to ensure that sessions allowed for openness and inclusiveness and that all stages of the process were completed. In addition, the use of a trained facilitator is important in ensuring that coalitions are not formed within groups [29]. An observer was also present during the sessions; his or her role was to note any deviations from the standardized protocol and record any observations that may prove helpful when interpreting the final results obtained during the preference elicitation process. An overt approach to observation was undertaken; that is, the panel members were aware of the observer’s presence and his or her role. The process was designed to enhance discussion and deliberation, and participants had the opportunity to change their individual responses following panel discussions (see Fig. 1 for further details).

While statistical techniques can explore quantitative issues such as reliability and comparability between different methods, they do not shed light on the way respondents interpret or answer the question. It was therefore considered that a mix of quantitative and qualitative approaches was appropriate for addressing the research question. Semi-structured interviews were used to explore a number of themes relating to the process of eliciting valuations and how respondents make their choices. One such area is the use of individual and group deliberation and that is of interest for this article. Interviews explored respondents’ feelings with regard to the group process with particular focus on aspects of deliberation and its possible effects on their overall response.

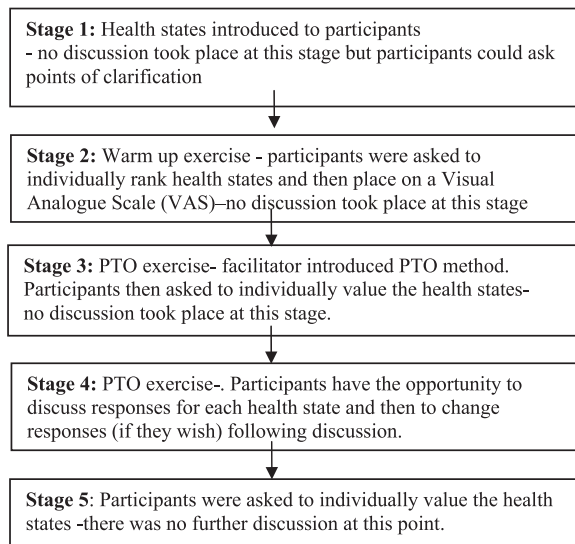


Fig. 1 – Flow diagram of stages of preference elicitation exercise. PTO, person trade-off.

PTO Technique

Before going on to outline the panel process in more detail, a brief description of the PTO technique used in this study is provided. The PTO version used in this study was developed by the EDW Group [27] and referred to as PTO3. The PTO exercise used in this study had two stages. The content of the PTO method is set out in Box 1 (see Box 1 in Supplemental Materials found at <http://dx.doi.org/10.1016/j.jval.2013.03.1633>). In stage 1, a single comparison was made between a program to prevent fatal disease and a program to prevent quadriplegia. In stage 2, a series of eight comparisons were made, each involving a program to prevent quadriplegia and a program to prevent one of the further eight diseases. Thus, quadriplegia became the anchor state.

Panel Participants

Health care professionals included general practitioners (GPs) and public health specialists. GPs were recruited from the northwest and West Midlands, UK. Letters of recruitment were sent to more than 1000 GPs. Public health specialists were recruited from both Liverpool and Birmingham universities. Non-health care professionals were recruited from the University of Birmingham and included academics, postgraduate students (non-health-related disciplines), and senior administrative staff within the university.

Panel Process

The panel process had three stages. Stages 1 and 2 did not involve participants sharing or discussing their preferences with other participants; instead, the intention was to help participants gain a greater understanding of the health states (stimulus) to be valued.

Stage 1—After opening the session, the facilitator introduced nine health states. Box 2 provides a list of health states; Fig. 2 provides an example health state (see Box 2 in Supplemental Materials found at <http://dx.doi.org/10.1016/j.jval.2013.03.1633>). There was no discussion at this point, but participants could ask for points of clarification relating to the health scenarios.

Stage 2—As part of a warm-up exercise, participants were asked to rank health states and then place them on a visual analogue scale; again, this was done individually without group discussion.

Stage 3—This involved the administration of the PTO exercise; further details of this stage are outlined below:

- After individually completing the PTO exercise for each health state (without discussion), the facilitator captured all the respondent preferences on a screen and thus all responses were visible to the group.
- Taking each health state in turn, the facilitator began exploring preferences and the implications of decisions with respondents. For example, if a participant suggested that he or she would not trade lives for a certain health state, then the facilitator explored the implications of this. This not only helped the respondent to give careful consideration in relation to his or her reasons for and against the decision but also provoked discussion in the group around what it would be like living in the different health states, and the implications of the various resource allocation decisions made by group members.
- Respondents were encouraged to have an open discussion about their own and others' preferences and resource allocation decisions.
- Following discussion, participants had the chance to change the valuations they had made by using PTO (valuations were recorded even if respondents did not make a change). Participants did not share their responses with the wider group at this stage.
- The analysis in this article explores changes between the first response and the final response (after discussion) at the individual and aggregate levels.

Interviews

Following the panel sessions, face-to-face semi-structured interviews were conducted with 20 panel members within a week of the panel exercise. Semi-structured interviews allow the researcher to “understand the world from the subject's point of view, to unfold the meaning of experiences, to uncover their lived world” [30]. In this exploratory study, semi-structured interviews were used because they allow for a balance between free-flowing and directed conversation, allowing research questions to be addressed fully by giving respondents the chance to explore their related concerns [31]. Interviews sought to draw on respondents' experiences, opinions, beliefs, feelings, knowledge, and perceptions [32].

Interviews were focused using a brief topic guide that covered themes that had emerged from the literature and from discussions during the health state valuation group sessions. The topic guide was used to ensure that all the themes were covered with each participant, and the ordering was changed to follow the

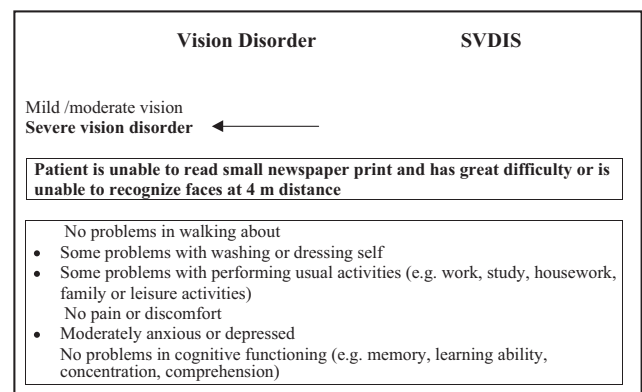


Fig. 2 – Health state descriptor example. SVDIS, severe vision disorder.

natural “flow” of discussion required for rapport. A copy of the topic guide can be obtained from the authors. In brief, the topics explored included the following:

- The impact of discussion on individual health state valuations—why did/didn’t respondents change their preference following discussion and deliberation;
- the process of administration—and the impact this may have on respondent values; and
- the impact of the group on deliberation and decision making.

Data Analysis

Quantitative

All quantitative data analysis was conducted by using Excel and SPSS version 18. The intraclass correlation coefficient was used to test for agreement between PTO valuations before and after discussion and deliberation [33]. The closer the coefficient is to 1, the greater the agreement between the valuations. Evidence of poor agreement would suggest that participants had changed their responses following discussion. We adopted the convention of Cohen [34] whereby a “strong” association is seen if correlations are over 0.50, a “moderate” association if between 0.30 and 0.50, and a “poor” association if between 0.10 and 0.30.

Qualitative

Data from the observer notes and transcribed data from the interviews formed the formal data analysis. The approach used to analyze the data consisted of a modified analytic induction, in which thematic categories identified in the previous literature were used as sensitizing devices in developing the analysis [35]. The approach used here drew on the work of Miles and Humberman [36], to ensure that a systematic refining of data analysis and the development of inductive themes was an ongoing iterative process of interpretation. Themes are examined by repeatedly revisiting data to build up conceptual links and test emerging hypothesis. Interviews explored respondents’ views, experiences, and feelings of the health state valuation exercise, with particular focus on the element of discussion and deliberation. Data reported below relate to data from respondent interviews and/or observer notes, which reflect aspects and themes that relate to the deliberative process.

Results

Response and Sample Characteristics

There were a total of 50 participants, across six panels: 21 non-health care participants and 29 health care professionals. Overall, 27 participants were female, and the mean age for the whole group was 41 years. Further details of the response and sample characteristics are outlined in Table 1.

Quantitative Analysis

A total of 127 (28%) PTO valuations saw a change between the first response and the final response. A total of 37 (74%) participants changed their PTO valuations. During the PTO exercise, 8 participants changed one valuation and 28 changed two or more valuations. One respondent changed all valuations after discussion and deliberation. Sixty responses saw an increase, and 67 responses saw a decrease in valuations. All health states saw at least one change in valuation.

The mean valuations are reported in Table 2. What is apparent from inspection of the data is that for all but one health state (visual disorder [VDIS]) the mean moved in a consistent direction toward lower values (valued worse) postdeliberation. The change in mean response was greatest for depression, which had a change of 0.355 between the first response (0.821) and the final response (0.466). Quadraplegia and stroke also saw fairly large changes between the first and final mean valuations (0.319 and 0.298, respectively). The SDs tend to be larger after deliberation, which seems to indicate that those who decreased their valuations presented a much larger change than those who increased valuations.

Assessment of Agreement

Table 2 reports the intraclass correlation coefficients for all nine health states. The coefficients for PTO ranged from 0.17 (coronary heart disease) to 0.82 (VDIS). This suggests that there was poor agreement between the first and final valuations for the majority of health states with strong agreement for only low back pain and VDIS.

Qualitative Analysis

Clarifying understanding

Respondents tended to be very positive about the panel process. A recurring theme during interviews was the positive aspect of having time to reflect on their own and others’ responses to the questions. A number of respondents suggested that the group process gave them time to clarify what the question was asking and get to “grips” with the decision-making role.

I thought having time to discuss was really helpful—it meant I could check I had understood the question ... which I hadn’t [laughs], I also had to give a bit of thought to the decision-making role ... cause it is not just about me but the implications of not choosing groups of patients ... it took a while to get to grips with that. (ID 9)

This was also reflected in the observer notes, which suggested that there was lots of discussion around the framing of the PTO question especially in relation to the role of decision maker. Thus, it seems that deliberation in the group allowed respondents the opportunity to reflect on their interpretation of the question and correct any misunderstandings they may have. Furthermore, respondents suggested that being in a

Table 1 – Sample characteristics.

| | Non-health care professionals | Health care professionals | Total |
|------------------------|-------------------------------|---------------------------|----------------|
| Number of participants | 21 | 29 | 50 |
| Age, mean \pm SD | 36 \pm 9.13 | 41 \pm 9.98 | 41 \pm 10.57 |
| Sex, n (%) females | 13 (62) | 14 (48) | 27 (54) |
| Degree, n (%) | 12 (57) | 29 (100) | 41 (82) |
| Employed, n (%) | 19 (90) | 29 (100) | 48 (96) |
| Student, n (%) | 2 (9) | 0 | 2 (4) |
| Have children, n (%) | 16 (76) | 13 (45) | 29 (58) |

Table 2 – Valuations for PTO first and final responses.

| Disease description | EQ-5D Questionnaire description | Person trade-off | | | | ICC |
|---------------------|---------------------------------|--|--|------------------------|------------------------|-----|
| | | HS valuation, mean \pm SD first response | HS valuation, mean \pm SD final response | N Valuations decreased | N Valuations increased | |
| BRC | 111221 | 0.963 \pm 0.115 | 0.825 \pm 0.351 | 9 | 9 | .27 |
| AST | 212221 | 0.988 \pm 0.300 | 0.874 \pm 0.274 | 8 | 11 | .32 |
| DEP | 123231 | 0.821 \pm 0.316 | 0.466 \pm 0.457 | 12 | 4 | .38 |
| STR | 222222 | 0.887 \pm 0.186 | 0.589 \pm 0.426 | 10 | 6 | .23 |
| VDIS | 112111 | 0.999 \pm 0.007 | 0.999 \pm 0.003 | 0 | 3 | .82 |
| DM | 112221 | 0.981 \pm 0.067 | 0.875 \pm 0.282 | 5 | 5 | .41 |
| QUA | 333221 | 0.538 \pm 0.408 | 0.219 \pm 0.311 | 5 | 3 | .25 |
| CHD | 212321 | 0.938 \pm 0.067 | 0.714 \pm 0.371 | 6 | 6 | .17 |
| LBP | 222211 | 0.970 \pm 0.144 | 0.933 \pm 0.204 | 12 | 13 | .77 |

AST, asthma; BRC, breast cancer; CHD, coronary heart disease; DEP, depression; DM, diabetes mellitus; EQ-5D, EuroQol five-dimensional; HS, health state; ICC, intraclass correlation coefficient; LBP, low back pain; QUA, quadriplegia; STR, stroke; VDIS, vision disorder.

group setting and knowing that they had to discuss their responses with others helped them to concentrate and focus on the valuation task.

The whole group experience made me really think about the questions—you know you don't want to get it wrong or look stupid. I know there was no right or wrong answer but I needed to be able to defend what I thought in a sensible fashion.(ID2)

Construction of preferences

The study was also interested in exploring what impact the process of deliberation had on final responses. For example, did the process help respondents in the construction of preferences or just confirm what they had already thought when responding individually to the PTO questions? The observer notes reported that “detailed discussion and debate around the health states took place during the sessions and that discussion and space to deliberate did seem to help respondents in their understanding of the complex task of health state valuation.” The majority of the respondents suggested that discussion and deliberation helped them to explore their choices and reflect on the implications of their decisions. For some respondents, having time to deliberate led them to change responses; for others, it confirmed their first decision.

The discussion did make me think about my choices—and I know I changed some following the discussion ... and I think this was the right thing to do I had really not given enough thought to what all this meant and if this was for real I would have liked to have taken even longer on this. (ID 20)

One area explored during interviews was around what may have prompted changes to valuations: that is, was it seeing other people's responses, or the discussion itself, or a mix of the two. The majority of the respondents seemed to suggest that seeing others' valuations was helpful but unlikely to lead them to make changes to their valuations.

it was good to see others' valuations to compare against my own, but I don't think that really made me change my answer, it was just interesting. (ID3)

Some respondents suggested that one aspect of the processes that prompted them to reassess their initial response was when the facilitator began to explore the implications of theirs and other group members' decisions.

I started to really question my answer when the facilitator pointed out the impact of my choice—you know if you continue to treat this group then you are really denying the others—I am not sure I got that at first I just thought this is the worse disease (points to quadriplegia) so I should just treat that. (ID 16)

A number of respondents referred to some of the detailed group discussions around the disease areas and how that had made them consider what it would be like living in a particular health state.

I think the discussion made me get away from my own prejudice or worries about certain diseases ... I just saw cancer and thought that should be treated, then in discussion I realised that this was not that bad and the cancer had been removed, so in that sense I think discussion helped me. (ID4)

Impact of the Group on Deliberation and Decision Making

Interviews explored how the group process and individuals in the group may have influenced individual decision making. The interest here was in whether the group setting had led to any of the following: consensus building (possible herding effects); normative group influence, which occurs when individuals make decisions to gain approval from other members in the group [37].

The majority of the respondents suggested that having time to deliberate had helped them to clarify and develop their views but that they had not been strongly influenced by others or felt the need to follow a group member who had strong viewpoints or who seemed very knowledgeable on a particular health state.

I did change a number of responses—I think this was due to me having time to think about what was being asked and the implications of my choices—rather than any dominant individuals in the group. (ID4).

Some individuals in the group seemed to know a lot about certain diseases—I think this was helpful in the discussion but I didn't feel I needed to change my response because of them ... but then I am a strong minded person—maybe others felt differently. (ID 18)

Only one respondent suggested that it was very confusing and hard to make choices when others had very different views.

Listening to others just confused me and I think if I am honest I felt a little pressured to change my response. (ID 15)

Discussion

This article reports one of the few studies to explore the effect of deliberation on health state valuations. Quantitative analysis suggested that the stability of responses varied between techniques. When undertaking the PTO exercise, a large proportion of the sample (74%) demonstrated a shift in valuations between their first and final responses. This could go some way to support Fischhoff's [2] view that preferences for health states are not complete, but rather constructed during the elicitation process.

Valuations in economic evaluations, however, use the population or group aggregate. Therefore, it is stability at the group level that we are interested in and changes that are apparent only at the individual level could just be due to noise in the valuation process [5,14,21]. In this study, changes to PTO valuations following deliberation did make a difference to the aggregated and group-level valuations, thus suggesting that respondents may well have incomplete preferences and the deliberative process helped them to reflect and think more deeply about their views and values of the health states.

These results differ from those of Stein et al. [5] who suggest that individual changes following discussion had negligible impact on the group aggregate and that only a minority of respondents seemed to be constructing preferences during the elicitation process. There are two methodological differences between our study and that of Stein et al that need to be considered.

The Impact of Perspective: Individual versus Societal

The first aspect relates to the different valuation techniques used. Stein et al. [5] explored deliberation by using a standard gamble technique, which took on an individual perspective (i.e., valuing for one's self), while our study used a PTO approach, which takes on a societal perspective (i.e., value for others). Studies suggest that PTO is a complex exercise and respondents do seem to have difficulty taking on a societal perspective and acting as a decision maker for others rather than themselves [23,38]. Shiell and Gold [17] suggest that when respondents are asked to consider someone else's health state (as in the PTO exercise) in more detail, this actually prompts deliberation. Thus, it could be that valuations relating to self (me) are preheld, but those relating to others (societal) are not and thus change more in deliberation.

The Impact of the Stimuli: The Use of Disease Labels

The second difference between this and Stein et al's study is that the health states in this study included a disease label. Other studies [39,40] have found that the use of disease labels may well lead to different health state valuation results and the inclusion of additional information such as a disease label may well provoke more detailed discussion. Stein et al. [5] note that participants presented little new information to the rest of the group. Like Stein et al., we did not undertake a detailed thematic analysis of the discussion taking place during panel sessions. However, our impression from the interview and observational data suggests that detailed discussions around health states and the implications of resource allocation decisions did take place. This detailed discussion may well have been driven by the framing of the scenarios and the inclusion of the disease label [39,40].

Results from our study suggested that valuations are more stable and less subject to change when the choice is less complex; that is, the trade is between a moderate health state (such as low back pain) and a severe health state (such as

quadriplegia). Interview data suggest that some individuals struggled to make decisions when choices needed to be made against severe health states such as depression and quadriplegia. Other studies have found that respondents were reluctant to trade when conditions were life threatening and suggest that respondents may be applying the rule of rescue [41–43]. That is respondents would rescue a “single identified endangered life, regardless of cost, at the expense of many nameless faces who will therefore be denied health care” [44]. Some respondents in this study did seem to be applying the rule of rescue. Other studies have found similar issues around “nontraders” and the PTO technique [38,41,43]. Such findings raise concerns over the use of PTO in health state valuation exercises, especially when the health states being valued are moderate to mild. However, the process of discussion and group deliberation gave respondents the opportunity to reflect on the implications of their decisions and explore ethical standpoints such as the “rule of rescue” and utilitarian principles (health maximization). For some, such discussions led to a change; for others, it confirmed their first decision.

The Impact of the Group: Possible “Herd” Effects

In our study, respondents tended to value health states more severely following discussion. One interpretation is that deliberative processes allowed respondents to think more deeply about their decision. Another interpretation is that increased discussion and deliberation allowed for consensus building and a possible “herding” effect. Baddeley [26] suggests that “herding is a response to uncertainty and individuals' perceptions of their own ignorance with individuals following others within the group because they feel these individuals are better informed”. While respondents suggested that they did not feel that individual group members dominated discussion or were “pushy” in relation to trying to force their individual perspective on the group, there was recognition that some group members seemed more knowledgeable about certain health states.

Social comparison theory suggests that people making decisions in group settings act differently than in isolation. It is argued that in groups individuals are motivated to behave in a socially desirable way [45]. Building on this notion, persuasive argument theory suggests the “reason why group decisions move in a particular direction is that the pool of arguments in that direction is more persuasive” [46]. Sunstein [47] notes that the likelihood of a shift in preferences is actually increased when people perceive other group members as friendly, likeable, and similar to them. The groups involved in this study were similar in education and professional backgrounds, and the observer noted that discussion was “lively but friendly.” If Sunstein's observations hold, then our study could well be creating the environment for social group cohesion to take place. Furthermore, the aggregate shift in health state valuation responses in our study tended to be in a similar direction (i.e., health states were valued as worse following discussion).

When the notion of group influence was explored with respondents in this study, however, they tended to suggest that discussion had helped them to construct their views but that they had not been strongly influenced by others. If it is the case that deliberation had allowed respondents to think more deeply on their views and as a result changed their valuations, this could well contest the notion of articulated values and support Fischhoff's theory of basic values.

Limitations of the Study

Limitations relating to the sample included the fairly small number of participants involved in the study and the relative

homogeneity of participants in that they tended to be well educated and white, and thus not representative of the wider population. There were a number of valuations, however, that were subject to potential change following deliberation. In terms of methodology, limitations included the method of investigation and the fact that a before and after measure was chosen. Future studies should consider using other methods such as a control group design that could provide greater insight into the impacts of other factors (such as the elicitation process, stimuli presented) on the observed changes in valuations. We would also advocate codifying the discussion and deliberation taking place within the panel sessions. Furthermore, the time elapsed between panel sessions and interviews may well have an impact on the responses given during interview. Overcoming such limitations should be considered in future research.

Conclusions

The results of this exploratory study suggest that a number of respondents changed at least one valuation. The qualitative analysis suggests that respondents welcomed a chance to discuss and deliberate before making their final response. Our respond-

ents like those in other studies [5] suggested that the process reassured respondents about initial preferences and helped them to check procedural performance. In addition, there was some support for the proposition that respondents may well have been developing preferences during the elicitation process and that the preference elicitation process was enhanced by the exploration of respondent choices, including discussion and challenge around the implication of resource allocation decisions. This does have implications for preference elicitation exercises, which have tended to be carried out as a solitary exercise [5]. Without codification of the discussion undertaken during the panel session, however, it is difficult to draw strong conclusions about whether discussion and deliberation were helping respondents to construct their views or instead changes were due to normative group influence. Furthermore, issues around the framing of the PTO question and the process of elicitation does limit the transferability of the findings.

This was an exploratory study of a very underresearched area in health economics, however, and this study does raise questions around the completeness of individuals' preferences when undertaking complex preference elicitation exercises using the PTO technique. More detailed research is needed to understand the impact of the deliberative element on individual and group preferences using PTO and other health state valuation techniques. Table 3 sets out some areas for future study.

Table 3 – Future research directions.

Validity—Theoretical considerations

Future research needs to:

- Undertake larger methodological studies that explore deliberation in relation to other health state valuation techniques (such as TTO and SG):
 - examining the hypothesis that deliberation does not have an effect on valuation techniques
- Use appropriate qualitative methodologies to further explore respondents' understanding of the elicitation process:
 - i.e., what are respondents thinking/doing when they undertake the tasks?—so more focus on *why* valuations differ alongside *how*
- Focus on the theoretical challenges for EUT including the notion of rational behavior and well-articulated preferences: i.e., develop research that tests and explores the notions of EUT theory and the suggestion that respondents have well-articulated preferences against the alternative argument that they need time to construct them? If the latter is true, attention needs to be afforded to what this means for health state valuation methodology.

Process issues

Future research needs to:

- Look at the process and mode of deliberation and how that should/could be structured;
- explore the hypothesis that framing factors can have an impact on individual and group preferences—(framing issues include the stimuli presented [i.e., impact of disease label] and questions posed);
- explore the suggestion that the process of administration (including facilitation and ordering of stimuli presented) can have an impact on individual and group response; and
- draw on the work of other areas such as psychology, environmental economics, and work on priority setting to explore the potential lessons in deliberative decision making in these areas—focusing on both theoretical and applied work.

EUT, expected utility theory; SG, standard gamble; TTO, time trade-off.

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Supplemental Materials

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